U.S DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

410 Rec'd PCT/PTO 27 SEP 2000

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER
3286-108P

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

09/647170

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/DE99/00744	March 17, 1999	March 30, 1998

TITLE OF INVENTION

ERROR PROTECTED DATA TRANSFER SYSTEM AND METHOD
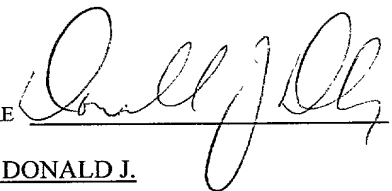
APPLICANT(S) FOR DO/EO/US

INDEFREY, Klaus; KRAMER, Werner; WIESGICKL, Bernhard

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.

2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.

3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39 (1).

4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date

5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))

    a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).

    b. ☒ has been transmitted by the International Bureau.

    c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).

6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(3)).

7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(2)).

    a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).

    b. ☐ have been transmitted by the International Bureau.

    c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.

    d. ☒ have not been made and will not be made.

8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).

9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).

10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98./International Search Report with cited references

12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.

13. ☒ A FIRST preliminary amendment.

    ☐ A SECOND or SUBSEQUENT preliminary amendment.

14. ☐ A substitute specification.

15. ☐ A change of power of attorney and/or address letter.

16. ☒ Other items or information:
    1.) Article 34 amendments
    2.) Drawing Correction Approval Request
    3.) Three (3) sheets of Formal Drawings

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17. ☒ The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5):

Neither international preliminary examination fee (37 CFR 1.482)
nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO
and International Search Report not prepared by the EPO or JPO. **$970.00**

International preliminary examination fee (37 CFR 1.482) not paid to
USPTO but International Search Report prepared by the EPO or JPO **$840.00**

International preliminary examination fee (37 CFR 1.482) not paid to USPTO
but international search fee (37 CFR 1.445(a)(2)) paid to USPTO. **$690.00**

International preliminary examination fee (37 CFR 1.482) paid to USPTO
but all claims did not satisfy provisions of PCT Article 33(1)-(4) **$670.00**

International preliminary examination fee (37 CFR 1.482) paid to USPTO
and all claims satisfied provisions of PCT Article 33(1)-(4). **$96.00**

	CALCULATIONS	PTO USE ONLY
ENTER APPROPRIATE BASIC FEE AMOUNT =	$ 970.00	
Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(e)).	$	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total Claims	7 - 20 =	0	X $18.00	$ 0	
Independent Claims	1 - 3 =	0	X $78.00	$ 0	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)	None		+ $260.00	$ 0	
TOTAL OF ABOVE CALCULATIONS =				$ 970.00	
Reduction of ½ for filing by small entity, if applicable. Verified Small Entity statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28).				$ 0	
SUBTOTAL =				$ 970.00	
Processing fee of **$130.00** for furnishing the English translation later than ☐20 ☐30 months from the earliest claimed priority date (37 CFR 1.492(f)). +				$ 0	
TOTAL NATIONAL FEE =				$ 970.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **$40.00** per property +				$ 40.00	
TOTAL FEES ENCLOSED =				$ 1010.00	
			Amount to be: refunded	$	
			charged	$	

a. ☒ A check in the amount of $ <u>1010.00</u> to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account. No. _____ in the amount of $_____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>02-2448</u>.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

Send all correspondence to:
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P.O. Box 747
Falls Church, VA 22040-0747
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SIGNATURE

<u>DALEY, DONALD J.</u>
NAME

<u>#34,313 (DJD)</u>
REGISTRATION NUMBER

/cqc September 27, 2000

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicants: Kaus INDEFREY; Werner KRAMER; Bernhard WIESGICKI

Application No.:   **NEW**

Filed: September 27, 2000

For: ERROR PROTECTED DATA TRANSFER SYSTEM AND
                 METHOD

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents   September 27, 2000
Washington, DC 20231

Sir:

The following preliminary amendments and remarks are respectfully submitted in
connection with the above-identified application.

IN THE ABSTRACT OF THE DISCLOSURE

Please replace the original Abstract with the attached revised Abstract.

IN THE SPECIFICATION

Please amend the specification as follows:

Page 1

Before line 1, insert --This application is the national phase under 35 U.S.C. §

371 of PCT International Application No. PCT/DE99/00744 which has an International

filing date of March 17, 1999, which designated the United States of America.--

Line 1,   delete "Description";

Line 9,   change "system, in which" to --system.--;

Line 10,   change "the" (first occurrence) to --The--; and

In between Lines 16 and 17 insert the following heading:

--<u>BACKGROUND OF THE INVENTION</u>--.

<u>Page 2   (Amended)</u>

Line 8,   change "system, in which the" to --system. The--;

In between Lines 17 and 18 insert the following heading:

-- <u>SUMMARY OF THE INVENTION</u>--;

Line 25,   change "unit, the" to --unit. The--; and

Line 27,   change "checkbit, and the" to --checkbit. The--.

<u>Page 2a (Amended)</u>

Line 6,   after "timer" insert --.--;

Line 7,   change "which, at" to --At--; before "switches" insert --the timer--;

Line 8,   change "condition, in which the" to --condition. The--;

Line 14,   change "addresses, a" to --addresses. A--; after "is" insert --,--;

after "case" insert --,--; and

Lines 17 and 18   delete "bit message as correct only if the two multi-bit

messages match one another".

<u>Page 3</u>

Line 6,   insert the following heading:

--<u>BRIEF DESCRIPTION OF THE DRAWINGS</u>--;

Line 14,   insert the following heading:

--DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS--; and

Line 16,   change "comprises" to --includes--.

Page 4

Line 7,   change "comprising" to --including--; after "bits" insert --,--;

Line 15,   change "comprises" to --includes--; and

Line 23,   change "comprising" to --including--.

Page 5

Line 33,   change "expires and" to --expires. Further--.

Page 6

Line 4,   after "is" insert --,-- and

Line 5,   after "case" insert --,--.

IN THE CLAIMS

Please amend the claims as follows:

1.   (Amended) Method for transferring data between a secure computer [(1),

e.g. an error-protected stored-program control (1)], and a [number] plurality of

input/output units [(2 to 4)] via a bus control unit [(6)] connected to the secure computer

[(1)] and a serial bus system [(5)], in which the bus control unit [(6)] cyclically activates

the plurality of input/output units [(2 to 4)] connected to the bus system [(5)] and

transfers a multi-bit message [(8)] to the respective activated input/output unit [(e.g. 4)],

[characterized in that] comprising:

[-]   <u>designing</u> at least one of the input/output units [(4) is designed] as a security unit [(4),]; and

[-]   <u>including at least one checkbit in</u> the multi-bit message [(8)] transferred to the security unit [(4) has at least one checkbit, and], wherein

[-]   the security unit [(4)] interprets the transferred multi-bit message [(8)] as correct only if the <u>at least one</u> checkbit alternates within a predefined monitoring period.

2.   (Amended) [Data transfer] <u>The</u> method according to claim 1, <u>further comprising:</u> [characterized in that]

[-]   <u>designing</u> the security unit [(4) is designed] as an output unit for activating an output [(10),], <u>including</u>

[-   has] a timer [(13)] which, at the end of the monitoring period, switches the output [(10)] to a secure condition, <u>wherein</u>

[-]   the timer [(13)] is reset with each transfer of a correct multi-bit message [(8)].

3.   (Amended) [Data transfer] <u>The</u> method according to claim 1 [or 2], [characterized in that] <u>wherein</u>

[-]   the security unit [(4)] can be activated under two different addresses,

[-]   a multi-bit message [(8)] is [in each case] transferred to the security unit [(4)] under [both] <u>each of the two different</u> addresses, and

[-]   the security unit [(4)] interprets the transferred multi-bit messages [(8)] as correct only if the two multi-bit messages [(8)] match one another.

4.   (Amended) [Data transfer] The method according to claim 1[, 2 or 3], [characterized in that] wherein the multi-bit message [(8) comprises] includes at least four data bits.

Please add the following new claims:

--   5.   The method according to claim 2, wherein

the security unit can be activated under two different addresses,

a multi-bit message is transferred to the security unit under each of the two different addresses, and

the security unit interprets the transferred multi-bit messages as correct only if the two multi-bit messages match one another.

6.   The method according to claim 2, wherein the multi-bit message includes at least four data bits.

7.   The method according to claim 3, wherein the multi-bit message includes at least four data bits. --

REMARKS

Claims 1-7 are now present in this application, with new claims 5-7 being added by the present Preliminary Amendment.

Changes made in the Preliminary Amendment have been made to correct minor informalities and to place the application, including the claims, in better form for U.S. practice. No changes in the claims have been made to avoid prior art.

Accordingly, an early indication of the allowability of each of claims 1-7 in connection with the present application is earnestly solicited.

The specification has been amended to provide a cross-reference to the previously filed International Application.
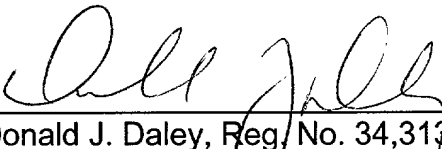
CONCLUSION

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Donald J. Daley at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By _____

Donald J. Daley, Reg. No. 34,313

P.O. Box 747

DJD:kna

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ABSTRACT OF THE DISCLOSURE

Data transfer between a secure computer and a number of input/output units occurs via a bus control unit connected to the secure computer and a serial bus system. The bus control unit cyclically activates the input/output units connected to the bus system and transfers multi-bit message to the respective activated input/output unit. In order to produce a data transfer method which enables security/related signals to be transmitted via a non-error-protected bus system, at least one of the input/output units is designed as a security unit. Further, the multi-bit message transferred to the security unit has at least one checkbit. The security unit interprets the transferred multi-bit message as correct only if the checkbit alternates within a predefined monitoring period.

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Description

Data transfer method

5   The present invention relates to a method for transferring data between a secure computer, e.g. an error-protected stored-program control, and a number of input/output units via a bus control unit connected to the secure computer and a serial bus system, in which

10   the bus control unit cyclically activates the input/output units connected to the bus system and transfers a multi-bit message to the respective activated input/output unit.

15   A data transmission method of this type is known, e.g. by the name AS-i (= activator-sensor interface).

In industrial automation engineering installations and machinery, hazardous conditions must be reliably

20   identified and the controlled installation or machinery must be rendered secure in such an event. According to the state of the art, dedicated recording, cabling and evaluation systems are mostly used for the transmission of security-related signals of this type.

25

The use of dedicated recording, wiring and evaluation systems entails in particular high cabling cost, with the inherent risk of incorrect wiring. Efforts are therefore also made to transmit security-related

30   signals via a bus system of this type. However, the security and reliability of the data transfer must not be adversely affected by a bus system of this type.

The security-related signals can be transmitted via a

35   separate, error-protected bus system. However, this

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runs counter to the general tendency to minimize the
wiring outlay.

DE 43 12 305 A1 discloses a method for transferring
5   data between an error-protected stored-program control
and a number of input/output units via a bus control
unit connected to the stored-program control and a
serial bus system, in which the bus control unit
transfers messages to the input/output units connected
10   to the bus system. In this data transfer method, at
least one of the input/output units is designed as a
security unit. Messages transferred to the security
unit are transferred redundantly and are checked to
ascertain whether or not they are identical. The
15   transferred messages are interpreted as correct only if
they are identical.

The object of the present invention is to provide a
further data transmission method by means of which
20   security-related signals can be transmitted via a non-
error-protected bus system.

The object is achieved in a data transmission method of
the aforementioned type in that at least one of the
25   input/output units is designed as a security unit, the
multi-bit message transferred to the security unit has
a checkbit, and the security unit interprets the
transferred multi-bit message as correct only if the
checkbit alternates within a predefined monitoring
30   period.

An insecure condition is thus avoided - even in the
case of non-redundant data transfer - not only if no

AMENDED PAGE

-2a.-

further multi-bit messages are transferred, e.g. in the event of failure of the bus control unit, but also if errored multi-bit messages are transferred.

5   If the security unit is designed as an output unit for activating an output, it may, for example, have a timer which, at the end of the monitoring period, switches the output to a secure condition, in which the timer is reset with each transfer of a correct multi-bit
10   message.

The data transmission method is even more secure if the security unit can be activated under two different addresses, a multi-bit message is in each case
15   transferred to the security unit under both addresses and the security unit interprets the transferred multi-bit message as correct only if the two multi-bit messages match one another.

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bit messages as correct only if the two multi-bit
messages match one another.

The multi-bit message preferably comprises at least
5   four data bits.

Further advantages and individual features are
presented in the following description of an
embodiment, including the following diagrams:
10
FIG 1:   a data transfer system,
FIG 2:   a data transfer, and
FIG 3:   a security unit.

15 According to FIG 1, a data transmission system
comprises a secure computer 1 and a number of
input/output units 2 to 4. The secure computer 1 is
designed in the present case as an error-protected
stored-program control. A stored-program control of
20 this type is manufactured and sold, e.g. by Siemens AG
under the designation SIMATIC S5-95F.

The input/output units 2, 3 are conventional
input/output units, by means of which up to four binary
25 signals can be processed per unit. The input/output
unit 4 on the other hand is a security unit. It can
process precisely one data element. However, the
security unit 4 could essentially process more data
elements. It is crucial that it processes at least one
30 data element less than the data bits transferred to it.
This redundant data bit can then be used to check the
data transfer system.

The input/output units 2 to 4 are connected to a serial
35 bus system 5. Furthermore, a bus control unit 6, which

in turn is connected to the secure computer 1, is connected to the bus system 5. To transfer data between the secure computer 1 and the input/output units 2 to 4, the secure computer 1 activates the bus control unit

5   6. The latter successively activates the input/output units 2 to 4 and transfers a multi-bit message 8 comprising at least four data bits to the relevant activated input/output unit 2 to 4.

10 The format of a data transfer is shown in FIG 2. According to FIG 2, the bus control unit 6, following a start bit 7' and a checkbit 7", first sends an address 7 via the bus system 5 in order to activate one of the input/output units 2 to 4. It then sends the multi-bit

15 message 8, which comprises five data bits. The first data bit is a changeover bit, which is processed internally by the activated input/output unit 2 to 4. The second to fifth data bits are the actual data. The multi-bit message 8 is followed by a checkbit 8' and an

20 end bit 8".

The activated input/output unit 2 to 4 sends a response 9, comprising four data bits, following a start bit 7'. The response 9 is again followed by a checkbit 8' and an

25 end bit 8".

The address 7 is incremented by the bus control unit 6 after each data transfer, until all input/output units 2 to 4 are activated. The input/output units 2 to 4 are

30 then reactivated with the lowest address, and the cycle restarts.

According to FIG 3, the security unit 4 is designed in the present case as an output unit for activating an

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output 10. Information indicating whether the output 10
should or should not be activated is therefore
transferred by the bus control unit 6 to the security
unit 4. The output 10 may be activated only if a

secure condition of a controlled system or a controlled machinery exists. The controlled system or the controlled machinery must not therefore pose any danger. Otherwise, the output 10 must be switched

5   immediately to the non-activated condition.

To determine the control signal for the output 10, the security unit 4 first evaluates the second data bit of the transferred multi-bit message 8. The output 10 will

10   be activated only if the data bit has the value one. Otherwise, the output 10 is switched to the secure, non-activated condition.

The third and fourth data bits are insignificant for

15   the security unit 4 in the present case. However, further outputs could be activated with them if necessary.

The fifth data bit of the multi-bit message 8 is a

20   checkbit. It is fed to a timer 13. The timer 13 is in each case reset when the checkbit fed to it alternates in relation to the checkbit previously fed to it. If, however, the checkbit retains its value, the timer 13 will expire at the end of a predefined monitoring

25   period. In this case, the timer 13 transfers a zero signal to an AND circuit 12, so that the output 10 is also switched in this case to the non-activated condition. In this case also, an insecure condition of the controlled system or controlled machinery is

30   therefore avoided. The monitoring period is defined in such a way that, on the one hand, in the case of correct (cyclical) bus traffic, the timer 13 is always reset in good time before it expires and, on the other hand, in the case of incorrect bus traffic, the output

35   10 is switched to the non-activated condition at the

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latest after a system-specific or machine-specific response time.

As is furthermore shown, the security unit 4 is designed in a redundant manner. It therefore has two bus modules 14, so that it can be activated under two different addresses. A separate multi-bit message 8 is

5   in each case transferred to each of the bus modules 14 under its own address. Each of the bus modules 14 autonomously evaluates the multi-bit message 8 transferred to it and activates its AND circuit 12 accordingly.

10

The outputs 10 of the two bus modules 14 are connected in series. In the result, the transferred multi-bit messages 8 are therefore interpreted as correct only if they match one another. The security of the data

15   transfer can be even further increased if the multi-bit messages 8 are transferred to the bus modules 14 inversely in relation to one another.

The bus modules 14 are reciprocally connected via

20   switches 15. Each of the bus modules 14 therefore recognizes the switching condition of the respective other bus module 14. In their responses 9, the bus modules 14 can therefore feed not only their own switching condition, but also the switching condition

25   of the respective other bus module 14, back to the secure computer 1. The security of the data transfer system is therefore even further increased.

A data transfer system with a single security unit 4,

30   designed as an output unit for activating an output 10, has been described above. However, a plurality of security units can of course be connected to the bus system 5. The security units can also be designed as secure input units.

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Claims

1.   Method for transferring data between a secure
computer (1), e.g. an error-protected stored-program
5   control (1), and a number of input/output units (2 to
4) via a bus control unit (6) connected to the secure
computer (1) and a serial bus system (5), in which the
bus control unit (6) cyclically activates the
input/output units (2 to 4) connected to the bus system
10   (5) and transfers a multi-bit message (8) to the
respective activated input/output unit (e.g. 4),
characterized in that
     -    at least one of the input/output units (4) is
          designed as a security unit (4),
15   -   the multi-bit message (8) transferred to the
          security unit (4) has at least one checkbit, and
     -    the security unit (4) interprets the transferred
          multi-bit message (8) as correct only if the
          checkbit alternates within a predefined monitoring
20   period.

2.   Data transfer method according to claim 1,
characterized in that
     -    the security unit (4) is designed as an output
25   unit for activating an output (10),
     -    has a timer (13) which, at the end of the
          monitoring period, switches the output (10) to a
          secure condition,
     -    the timer (13) is reset with each transfer of a
30   correct multi-bit message (8).

3. Data transfer method according to claim 1 or 2, characterized in that

- the security unit (4) can be activated under two different addresses,

5 - a multi-bit message (8) is in each case transferred to the security unit (4) under both addresses, and

- the security unit (4) interprets the transferred multi-bit messages (8) as correct only if the two

10 multi-bit messages (8) match one another.

4. Data transfer method according to claim 1, 2 or 3, characterized in that the multi-bit message (8) comprises at least four data bits.

Abstract

Data transfer method

The present invention relates to a method for transferring data between a secure computer (1), e.g. an error-protected stored-program control (1), and a number of input/output units (2 to 4) via a bus control unit (6) connected to the secure computer (1) and a serial bus system (5), in which the bus control unit (6) cyclically activates the input/output units (2 to 4) connected to the bus system (5) and transfers a multi-bit message (8) to the respective activated input/output unit (e.g. 4), In order to produce a data transfer method which enables security-related signals to be transmitted via a non-error-protected bus system (5), it is proposed according to the invention, that
- at least one of the input/output units (4) is designed as a security unit (4),
- the multi-bit message (8) transferred to the security unit (4) has at least one checkbit, and
- the security unit (4) interprets the transferred multi-bit message (8) as correct only if the checkbit alternates within a predefined monitoring period.
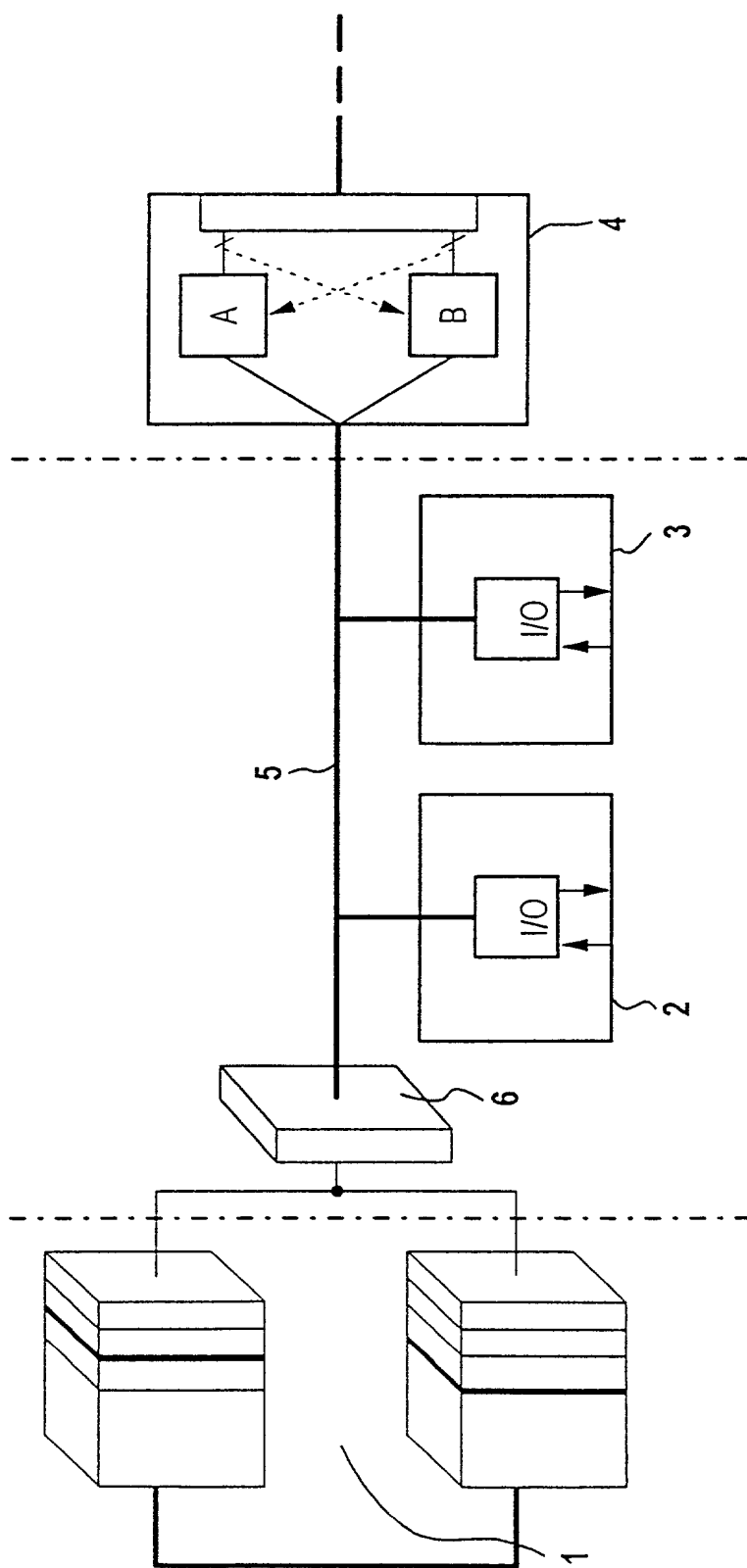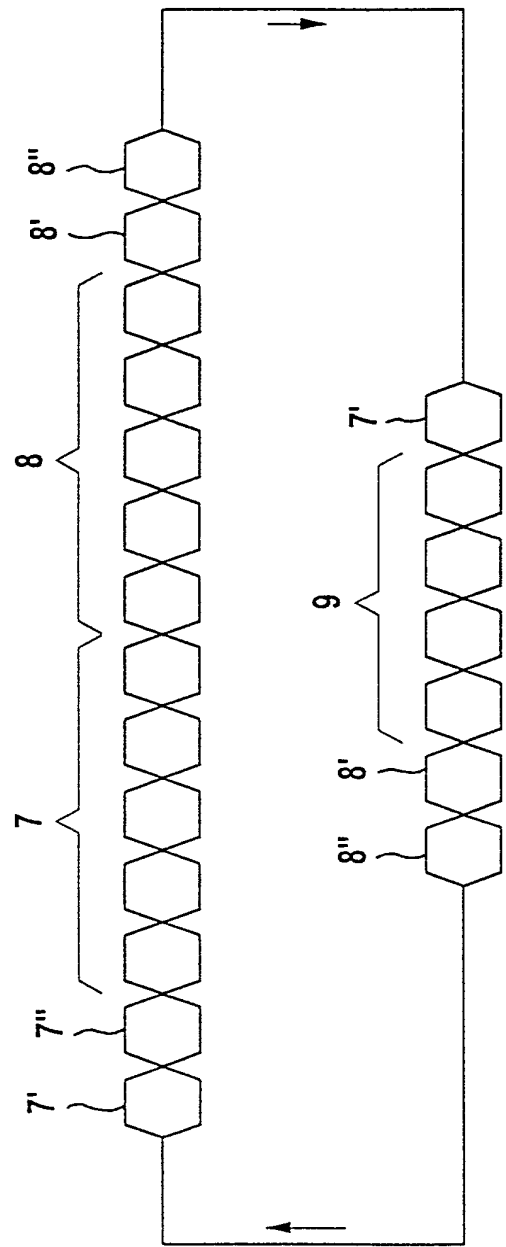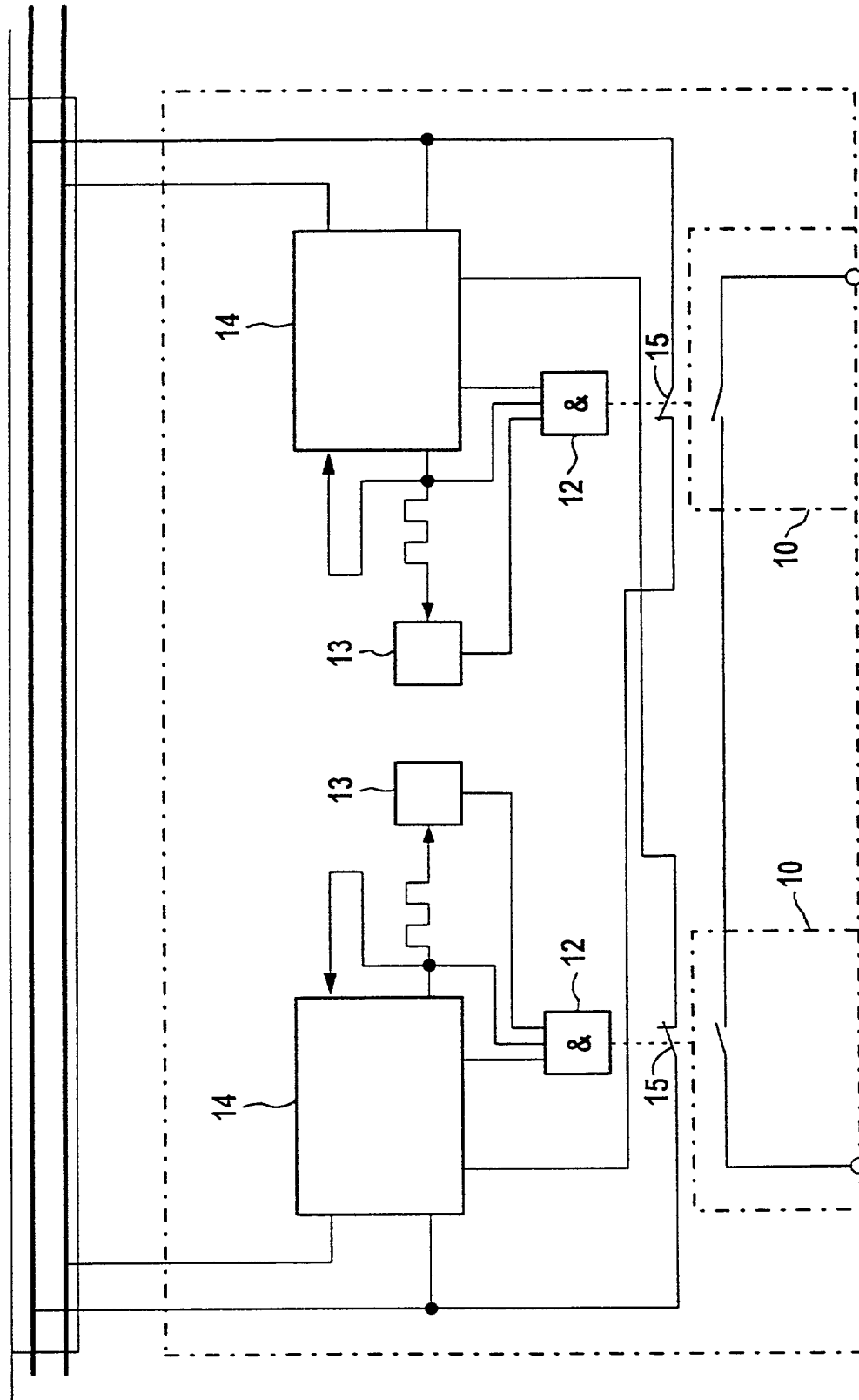
FIG 3

FIG 1

FIG 2

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FIG 3

Declaration and Power of Attorney For Patent Application
Erklärung Für Patentanmeldungen Mit Vollmacht
German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

As a below named inventor, I hereby declare that:

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

My residence, post office address and citizenship are as stated below next to my name,

dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

FEHLERSICHERES DATENÜBERTRAGUNGSSYSTEM UND -VERFAHREN

ERROR PROTECTED DATA TRANSFER SYSTEM AND METHOD

deren Beschreibung

the specification of which

(zutreffendes ankreuzen)

(check one)

☐ hier beigefügt ist.

☐ is attached hereto.

☒ am <u>17. März 1999</u> als
PCT internationale Anmeldung:
PCT Anmeldungsnummer:<u>PCT/DE99/00744</u>
eingereicht wurde und am
abgeändert wurde (falls tatsächlich abgeändert).

☐ was filed on _____ as
PCT international application
PCT Application No. _____
and was amended on _____
(if applicable)

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind, an.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

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Prior foreign appplications
Priorität beansprucht

<u>Priority Claimed</u>

<u>198 14 102.5</u> <u>DE</u>
(Number) (Country)
(Nummer) (Land)

<u>30.03.1998</u>
(Day Month Year Filed)
(Tag Monat Jahr eingereicht)

☐ Yes / Ja   ☐ No / Nein

_____ _____
(Number) (Country)
(Nummer) (Land)

_____
(Day Month Year Filed)
(Tag Monat Jahr eingereicht)

☐ Yes / Ja   ☐ No / Nein

_____ _____
(Number) (Country)
(Nummer) (Land)

_____
(Day Month Year Filed)
(Tag Monat Jahr eingereicht)

☐ Yes / Ja   ☐ No / Nein

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozeßordnung der Vereinigten Staaten, Paragraph 122 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind.

I hereby claim the benefit under Title 35. United States Code. §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §122, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occured between the filing date of the prior application and the national or PCT international filing date of this application.

_____
(Application Serial No.)
(Anmeldeseriennummer)

(Filing Date)
(Anmeldedatum)

_____
(Status)
(patentiert, anhängig, aufgegeben)

(Status)
(patented, pending, abandoned)

_____
(Application Serial No.)
(Anmeldeseriennummer)

(Filing Date)
(Anmeldedatum)

_____
(Status)
(patentiert, anhängig, aufgeben)

(Status)
(patented, pending, abandoned)

Ich erkläre hiermit, dass alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, dass wissentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden koennen, und dass derartig wissentlich und vorsätzlich falsche Angaben die Gültigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentes gefährden können.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. *(list name and registration number)*

And I hereby appoint

Raymond C. Stewart (Reg. No. 21,066); Terrell C. Birch (Reg. No. 19,382); Joseph A. Kolasch (Reg. No. 22,463); James M. Slattery (Reg. No. 28,380); Bernard L. Sweeney (Reg. No. 24,448); Michael K. Mutter (Reg. No. 29,680); Charles Gorenstein (Reg. No. 29,271); Gerald M. Murphy, Jr. (Reg. No. 28,977); Leonard R. Svensson (Reg. No. 30,330); Terry L. Clark (Reg. No. 32,644); Andrew D. Meikle (Reg. No. 32,868); Marc S. Weiner (Reg. No. 32,181); Joe McKinney Muncy (Reg. No. 32,334); Donald J. Daley (Reg. No. 34,313); John W. Bailey (Reg. No. 32,881); John A. Castellano (Reg. No. 35,094); and Gary D. Yacura (Reg. No. 35,416).

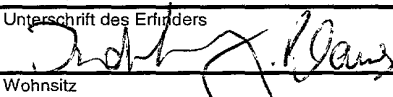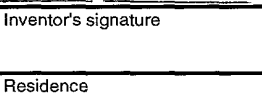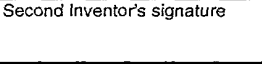| Telefongespräche bitte richten an: *(Name und Telefonnummer)*	Direct Telephone Calls to: *(name and telephone number)*
	(703) 205-8000 Ext. _____

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(Supply similar information and signature for third and subsequent joint inventors).

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over

3286-108P

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Staatsangehörigkeit	Citizenship
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AN DER VILS 20	AN DER VILS 20
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Voller Name des vierten Miterfinders (falls zutreffend):	Full name of fourth joint inventor, if any:
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Postanschrift	Post Office Address

Voller Name des fünften Miterfinders (falls zutreffend):	Full name of fifth joint inventor, if any:
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Postanschrift	Post Office Address

Voller Name des sechsten Miterfinders (falls zutreffend):	Full name of sixth joint inventor, if any:
Unterschrift des Erfinders Datum	Inventor's signature Date
Wohnsitz	Residence
Staatsangehörigkeit	Citizenship
Postanschrift	Post Office Address

(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Miterfindern angeben). *(Supply similar information and signature for third and subsequent joint inventors).*